

Abstract Submitted
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Self assembly of organic nanostructures and dielectrophoretic assembly of inorganic nanowires. GEETHA DHOLAKIA¹, NASA Ames Research Center, STEVEN KUO, NASA Ames, San Jose State University, E. L. ALLEN², San Jose State University, NASA AMES TEAM, SAN JOSE STATE UNIVERSITY TEAM — Self assembly techniques enable the organization of organic molecules into nanostructures. Currently engineering strategies for efficient assembly and routine integration of inorganic nanoscale objects into functional devices is very limited. AC Dielectrophoresis is an efficient technique to manipulate inorganic nanomaterials into higher dimensional structures. We used an alumina template based sol-gel synthesis method for the growth of various metal oxide nanowires with typical diameters of 100-150 nm, ranging in length from 3-10 μm . Here we report the dielectrophoretic assembly of TiO_2 nanowires, an important material for photocatalysis and photovoltaics, onto interdigitated devices. Self assembly in organic nanostructures and its dependence on structure and stereochemistry of the molecule and dielectrophoretic field dependence in the assembly of inorganic nanowires will be compared and contrasted. Tunneling spectroscopy and DOS of these nanoscale systems will also be discussed.

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